



TEXT JOINS FOR DATA CLEANSING AND INTEGRATION IN A RELATIONAL DATABASE

MANAGEMENT SYSTEM

10/828,819 (1209-29)

Replacement Sheet

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```

INSERT INTO RiIDF(token, idf)
SELECT T.token, LOG(S.size)-LOG(COUNT(UNIQUE (*)))
FROM RiTokens T, RiSize S
GROUP BY T.token, S.size
(a) Relation with token idf counts

INSERT INTO RiLength(tid, len)
SELECT T.tid, SQRT(SUM(I.idf*I.idf*T.tf*T.tf))
FROM RiIDF I, RiTF T
WHERE I.token = T.token
GROUP BY T.tid
(c) Relation with weight-vector lengths

INSERT INTO RiSum(token, total)
SELECT R.token, SUM(R.weight)
FROM RiWeights R
GROUP BY R.token
(e) Relation with total token weights

INSERT INTO RiTF(tid, token, tf)
SELECT T.tid, T.token, COUNT(*)
FROM RiTokens T
GROUP BY T.tid, T.token
(b) Relation with token tf counts

INSERT INTO RiWeights(tid, token, weight)
SELECT T.tid, T.token, I.idf*T.tf/L.len
FROM RiIDF I, RiTF T, RiLength L
WHERE I.token = T.token AND T.tid = L.tid
(d) Final relation with normalized tuple
      weight vectors

INSERT INTO RiSize(size)
SELECT COUNT(*)
FROM Ri
(f) Dummy relation used to create RiIDF

```

FIG. 1

```
SELECT r1w.tid AS tid1, r2w.tid AS tid2
FROM R1Weights r1w, R2Weights r2w
WHERE r1w.token = r2w.token
GROUP BY r1w.tid, r2w.tid
HAVING SUM(r1w.weight * r2w.weight) > 0
```

FIG. 2

```
SELECT rw.tid, rw.token, rw.weight / rs.total AS P
FROM RiWeights rw, RiSum rs
WHERE rw.token = rs.token
```

FIG. 3

```
INSERT INTO RiSample(tid, token, c)
SELECT rw.tid, rw.token, ROUND(S * rw.weight / rs.total, 0) AS c
FROM RiWeights rw, RiSum rs
WHERE rw.token = rs.token
```

FIG. 4

```
SELECT r1w.tid AS tidi, r2s.tid AS tid2
FROM R1Weights r1w, R2Sample r2s, R2Sum r2sum, R1V r1v
WHERE r1w.token = r2s.token AND r1w.token = r2sum.token AND r1w.tid = r1v.tid
```

FIG. 5

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```

SELECT tid1, tid2
FROM
(
  SELECT r1w.tid AS tid1, r2s.tid AS tid2, SUM(r1w.weight * r2sum.total) AS Ci
  FROM R1weights r1w, R2sample r2s, R2sum r2sum
  WHERE r1w.token = r2s.token AND r1w.token = r2sum.token AND r1w.tid = r1v.tid
  GROUP BY r1w.tid, r2s.tid
  UNION ALL
  SELECT r1s.tid AS tid1, r2w.tid AS tid2, SUM(r2w.weight * r1sum.total) AS Ci
  FROM R2weights r2w, R1sample r1s, R1sum r1sum
  WHERE r2w.token = r1s.token AND r2w.token = r1sum.token AND r2w.tid = r2v.tid
  GROUP BY r2w.tid, r1s.tid
) SYM
GROUP BY tid1, tid2
HAVING AVG(Ci) ≥ S * Φ'
```

FIG. 6

```

SELECT r1s.tid AS tid1, r2s.tid AS tid2
FROM R1Sample r1s, R2Sample r2s, R1Sum r1sum, R2Sum r2sum
WHERE r1s.token = r1sum.token AND R2Sample.token = r2sum.token AND r1s.token = r2s.token
GROUP BY r1s.tid, r2s.tid
HAVING SUM(r1sum.total * r2sum.total) ≥ S * S * Φ'
```

FIG. 7

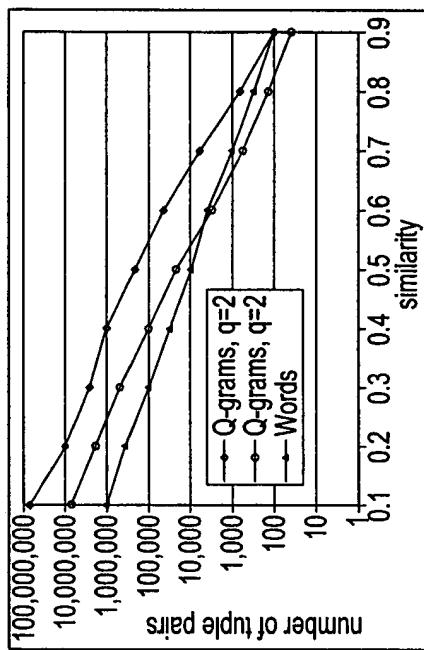
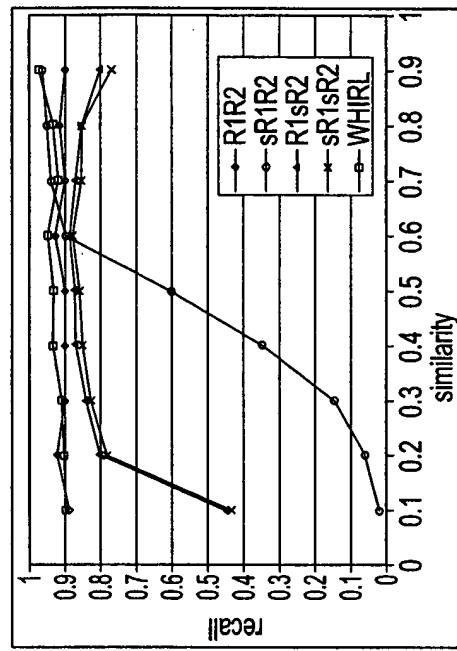
(a) String lengths in data sets R_1 and R_2

FIG. 8A

The size of $R_1 \times R_2$ for different similarity thresholds and token choices.

FIG. 8B



(a) Words

FIG. 9B

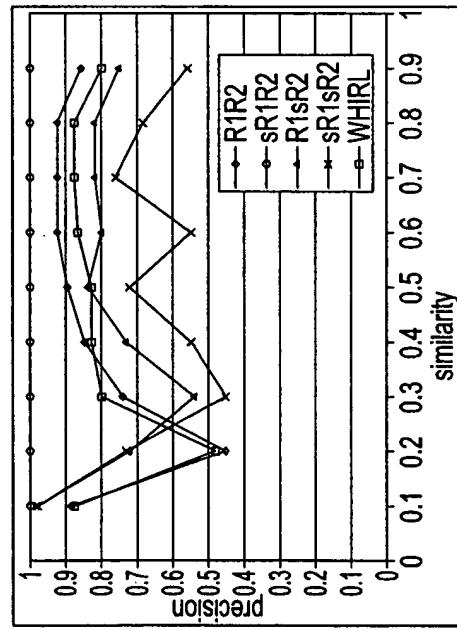


FIG. 9A

(a) Words

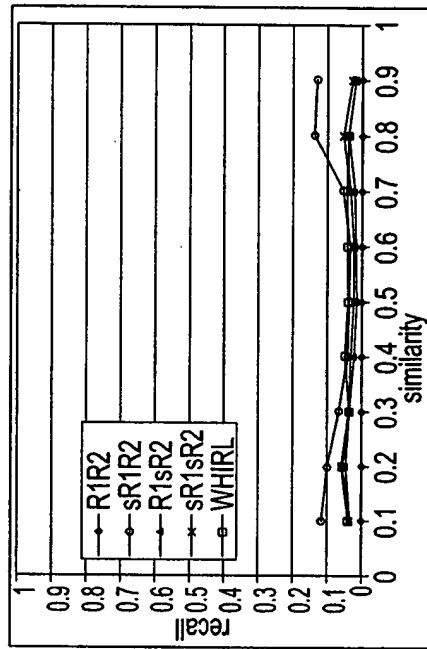


FIG. 9D

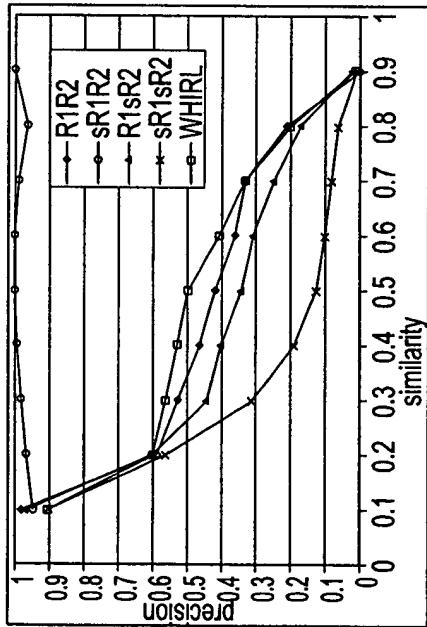


FIG. 9C

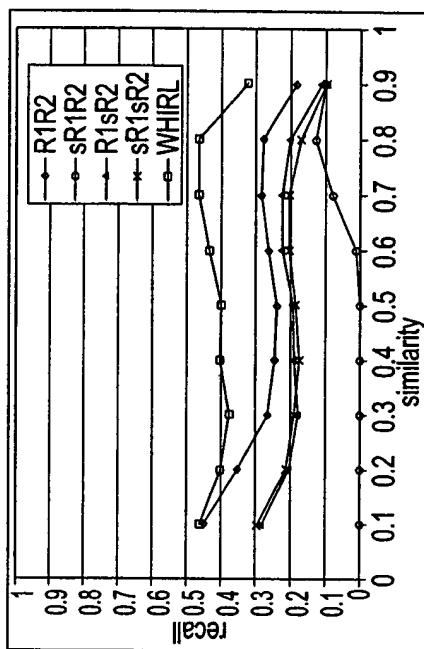


FIG. 9F

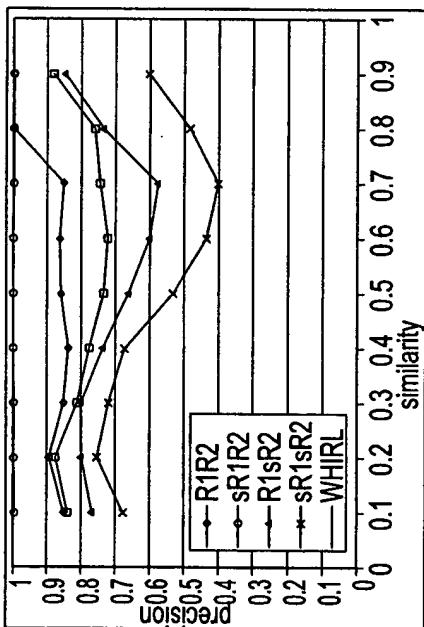


FIG. 9E

Replacement Sheet

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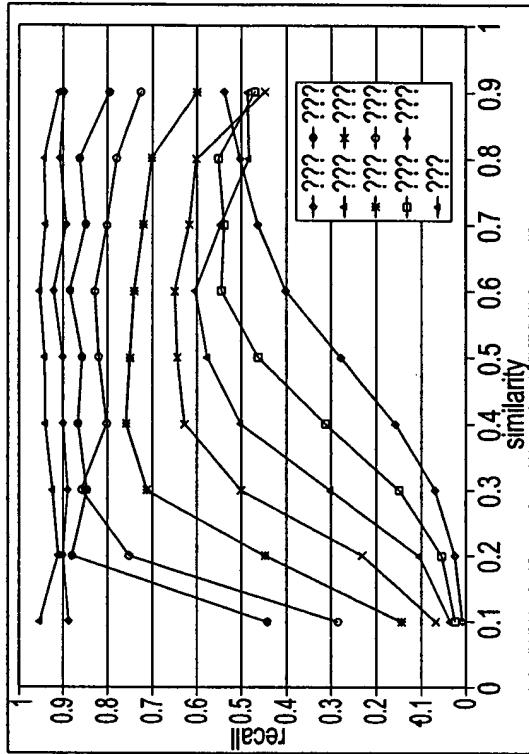


FIG. 10B

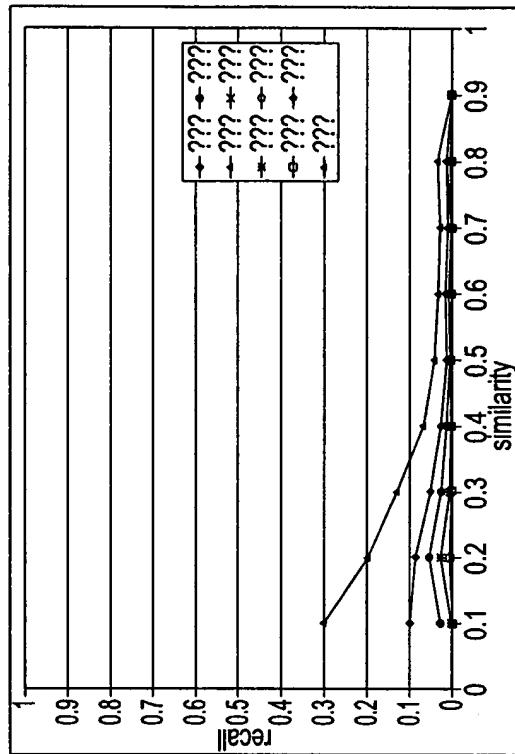


FIG. 10D

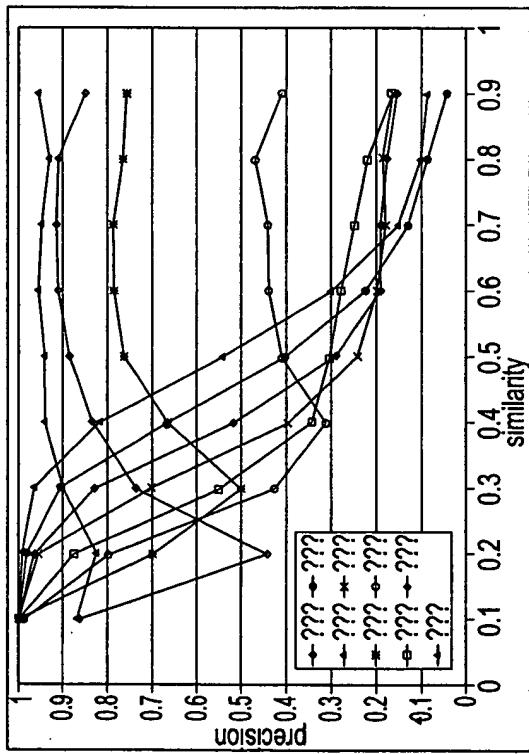


FIG. 10A (a) Words

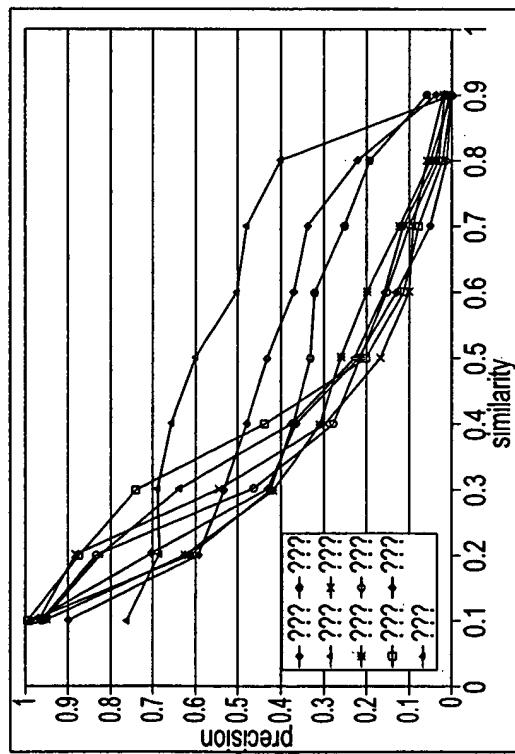


FIG. 10C (b) Q-grams with q = 2

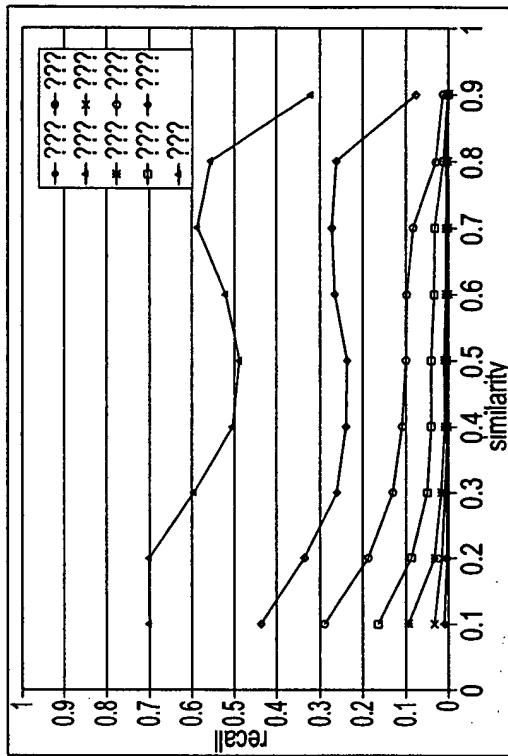


FIG. 10F

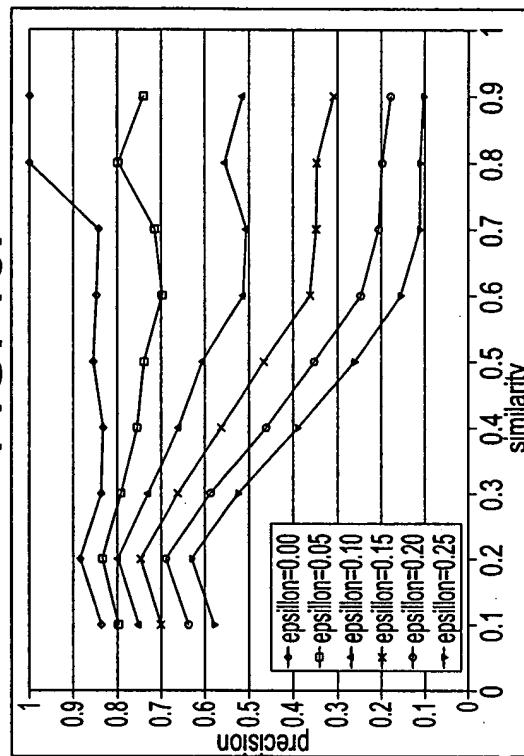
(c) Q -grams with $q = 3$ 

FIG. 11B

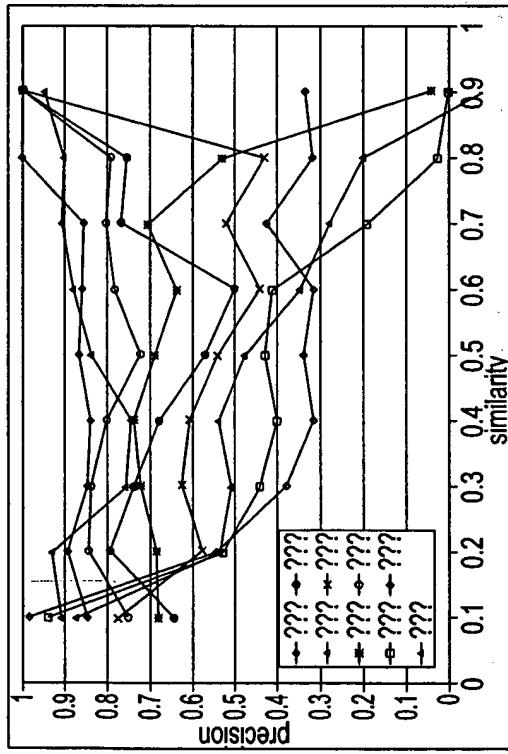


FIG. 10E

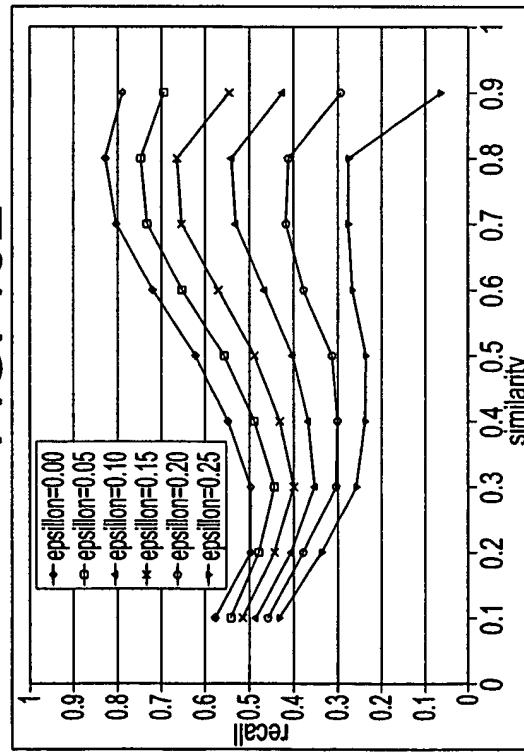
(c) Q -grams with $q = 3$ 

FIG. 11A

Replacement Sheet

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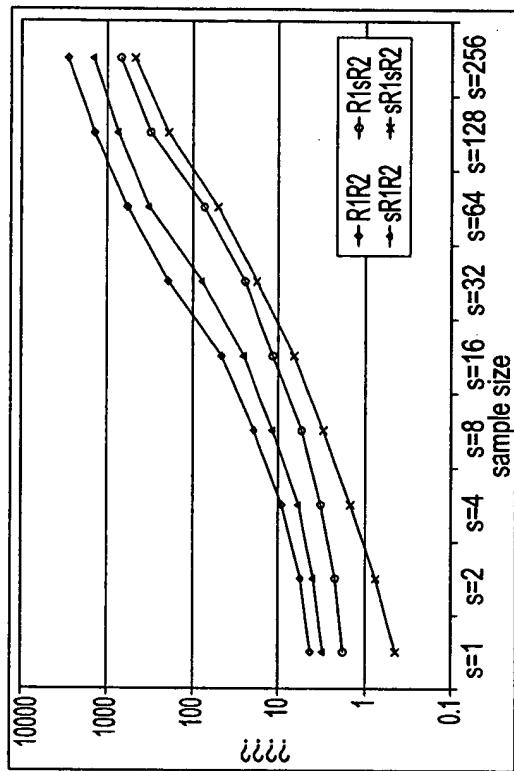


FIG. 12A
(a) Words

FIG. 12B
(b) Q-grams with $q=3$

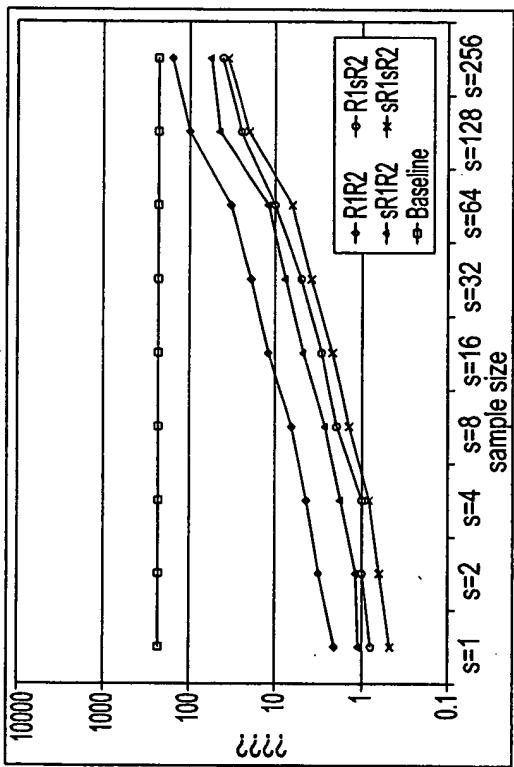


FIG. 12C
(c) Q-grams with $q=2$

FIG. 12D
(d) WHIRL

